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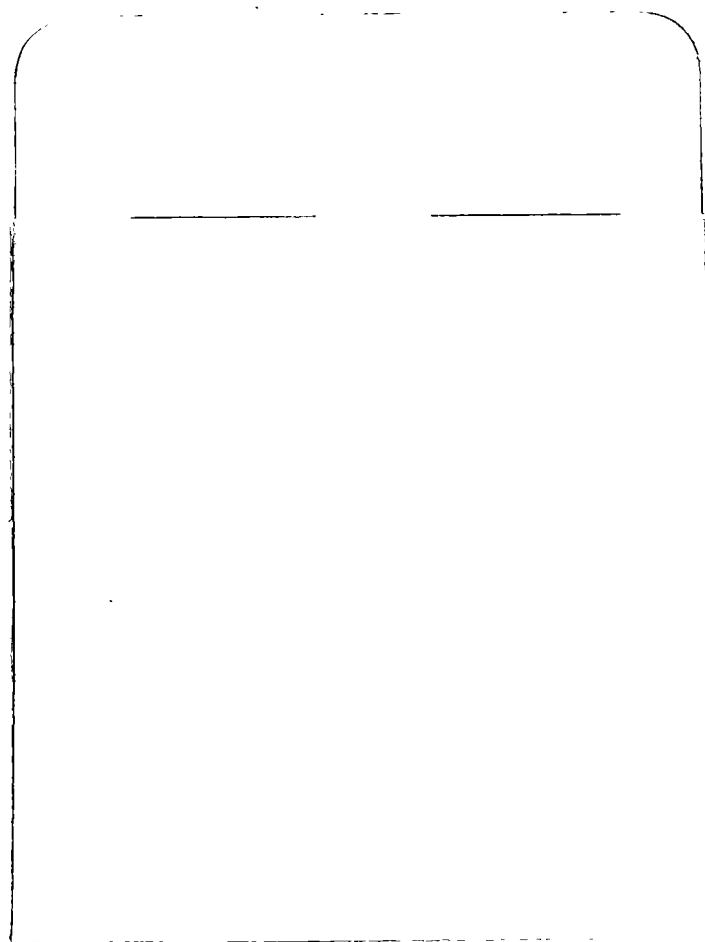
**ARMY
WHOLESALE
MAINTENANCE
MANAGEMENT**

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HEADQUARTERS, DEPARTMENT OF THE ARMY

AUGUST 1991



FIELD MANUAL

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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 9 August 1991**ARMY WHOLESALE MAINTENANCE MANAGEMENT**

Effective support of our fighting forces requires a coordinated maintenance system. Neither the wholesale nor retail communities can provide support in isolation from the other. This manual illustrates wholesale maintenance and the wholesale/retail interface.

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This manual supersedes FM 750-80, 31 August 1987.



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CHAPTER 1 INTRODUCTION

1-1. Purpose and Scope. The purpose of this manual is to establish wholesale materiel maintenance management doctrine. Logistics doctrine is a collection of the best thinking the Army has to offer on how to perform a particular combat service support in wartime. Consequently, the intent of this manual is to provide information about wholesale maintenance which will be useful in planning for and providing support in time of war. Commanders, staff officers, logisticians, and nonlogisticians need to know how wholesale maintenance supports the Army's combat strength. Not only is this knowledge applicable to the Active Army, but it is equally applicable to the Army National Guard (ARNG) and the Army Reserve. This doctrine is for use in war and contingency planning, logistics planning, and force modernization, as well as in improving everyday operations.

1-2. References. Required and related publications are listed in appendix A.

1-3. Explanation of Abbreviations and Terms. Abbreviations used in this manual are explained in the glossary; special terms are explained below.

a. Materiel maintenance. The function of sustaining materiel in an operational status, restoring it to a serviceable condition, or updating and upgrading its functional usefulness through modification or other alteration. The maintenance function includes varied types of activities performed by many different organizational elements. The ultimate goal of these organizations is to create and sustain combat readiness in the Army. Because maintenance activities are so diverse, they can be categorized in many different ways. A basic method of identifying maintenance is to divide it into two subfunctions: maintenance engineering and maintenance operations.

b. Maintenance engineering. That activity of materiel maintenance which develops concepts, criteria, and technical requirements during the materiel acquisition process. After acquisition, maintenance engineering activities continue to ensure timely, effective, and economical maintenance support throughout the entire life cycle.

c. Maintenance operations. The actual physical performance of maintenance and the management of such performance. Maintenance operations are generally divided into four levels. These are unit, direct support (DS), general support (GS), and depot, as addressed in AR 750-1, Army Materiel Maintenance Policy and Retail Maintenance Operations. These levels of maintenance identify the scope of the operation which may be performed at various command levels. The responsibility to perform maintenance within a given level is assigned to a unit or activity under maintenance planning developed during the materiel acquisition phase. This responsibility is based on mission; degree of mobility and complexity; intended, or availability of, personnel; skills; and materiel resources. The collective objective of each level is to restore materiel to a state of serviceability.

(1) *Unit maintenance.* The preventive and corrective maintenance performed by a using unit on its own equipment.

(2) *DS maintenance units.* Provide DS to the user by repairing and returning materiel directly to the user, repairing high usage components for reparable exchange (RX), and maintaining and controlling the use of operational readiness floats (ORF).

(3) *GS maintenance units.* Perform those maintenance actions required to support a force as a whole, rather than specific elements. GS maintenance units are normally located at echelons above corps and perform maintenance in support of the theater supply system through the repair of assemblies, components and modules, RX items, printed circuit boards (PCB), and back-up maintenance support for DS units when required.

(4) *Depot maintenance.* The highest level of maintenance, performing those tasks which cannot be performed at a lower level. It is performed in fixed facilities in the continental United States (CONUS) and the theater of operations (TO), and is production line oriented.

(5) *Aviation maintenance.* An exception to the above. Aviation maintenance is comprised of three levels: aviation unit maintenance (AVUM), aviation intermediate maintenance (AVIM), and aviation depot maintenance. In a theater of operations,

theater level AVIM assets have limited depot maintenance capability.

d. Retail maintenance. Performed at the direct and GS and unit levels of maintenance, both in CONUS and outside continental United States (OCONUS). This activity may be in support of contingency operations, an established TO, a deployable unit, or command.

e. Wholesale maintenance. That maintenance activity which is performed above the retail level. The depot level of maintenance performs wholesale maintenance operations. The Army Materiel Command (AMC) is responsible for managing wholesale maintenance management. Its headquarters directs the activities of depots, arsenals, and test facilities used in wholesale maintenance. The AMC major subordinate commands (MSCs) develop, procure, distribute, and support Army materiel systems. Organizations outside AMC have wholesale maintenance responsibility for some specialized commodities.

1-4. Recommended Changes.

a. Since changes in doctrine are continually occurring, users of this field manual are encouraged to make comments and recommend changes which will improve the technical quality of this document.

b. When changes are recommended, all comments should be directed to the specific page, paragraph, and line of the text. To ensure understanding and accurate evaluation, it is requested that reasons for a change be provided for each comment. Comments should be submitted on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded directly to the Commandant, United States Army Logistics Management College (ALMC), ATTN: AMXMC-MR-MM, Fort Lee, Virginia 23801-6049.

1-5. The Wholesale Maintenance Mission. Wholesale maintenance has but one purpose—to sustain combat readiness of United States (U.S.) and Allied forces. This purpose is achieved by—

a. Providing a system for the maintenance of Army materiel systems.

b. Determining where, when, how, why, and by whom maintenance actions must be taken.

c. Using maintenance data during system development to lessen the maintenance requirement and after system fielding to improve maintenance performance.

d. Conducting depot maintenance.

e. Providing maintenance assistance to retail maintenance organizations. Wholesale maintenance

responsibilities are consolidated to take advantage of centralized management, which results in an efficiency of operations.

1-6. Organization for Wholesale Maintenance Management. Army wholesale maintenance addresses the Army maintenance system above the retail level. Wholesale maintenance responsibility resides within such Army agencies as—

a. The Surgeon General (TSG). TSG's responsibilities are predominantly oriented toward development of concepts, policy, doctrine, and plans for the wholesale maintenance of medical materiel. This includes the development of medical force structures, organizations, and capabilities to provide for the maintenance of medical materiel, as well as the management of medical materiel for the Army.

b. The Chief of Engineers (COE). The COE's responsibilities are similar to those of TSG, but are oriented toward nontype classified materiel and nonstandard materiel used exclusively to accomplish the worldwide facilities engineering mission. The COE also assists other materiel developers and Army major commands in identifying requirements for, and the design and construction of, maintenance facilities.

c. Department of the Army (DA) Deputy Chief of Staff for Logistics (DCSLOG). The DA DCSLOG provides general staff supervision of maintenance activities. This includes the formulation of concepts, policies, plans, and program guidance for materiel maintenance engineering, maintenance support services, and depot-level maintenance of materiel systems. In short, the DCSLOG is responsible for the overall materiel readiness and sustainability of the Army.

d. Other activities. In addition to the above, other activities (e.g., the Deputy Chief of Staff for Operations and Plans (DCSOPS); the Deputy Chief of Staff for Intelligence (DCSIN); and the Training and Doctrine Command (TRADOC)) are involved to a degree in the wholesale maintenance mission. However, the majority of wholesale maintenance management of the Army's materiel lies with AMC.

e. AMC. AMC is a major Army Command (MACOM). It has materiel life-cycle responsibility. Functions of AMC include formulating the materiel portions of the DA program and executing approved programs, providing integrated commodity management consisting of—

- (1) Research, development, and modification.
- (2) Developmental testing and evaluation.

(3) Maintenance support planning, including personnel, training, manuals, repair parts, tools, test equipment, and modifications or product improvements.

(4) Technical and engineering supervision and services, including technical advisory service, product engineering, production engineering, maintenance engineering, human factors engineering, and development of battlefield damage assessment and repair (BDAR) techniques and procedures.

(5) Army provisioning technical and functional policy and implementation for initial and follow-on support.

(6) Product assurance.

(7) Value engineering.

(8) Procurement and production.

(9) Integrated materiel inventory management.

(10) Materiel and industrial mobilization planning, contingency planning, and maintenance of mobilization reserves and production base.

(11) Management of the DA equipment publications program and preparation or acquisition of equipment publications.

(12) Technical direction and management of the depot maintenance programs.

(13) Transportation, transportability, and transportation engineering.

(14) Development and recommendation to Headquarters, Department of the Army (HQDA) of new and improved concepts, maintenance doctrine, and procedures for wholesale logistics operations.

(15) Management and control of working capital funds.

(16) Development of automated wholesale logistics systems which interface with Army and other retail logistics systems as well as other Department of Defense (DOD) wholesale systems.

(17) Conduct of specialized training of personnel in the materiel area, to include new equipment training (NET).

(18) Management of the central data management program for equipment warranties.

(19) Management of the AMC portion of the Army-Wide Training Literature Program (ATLP); i.e., preparation of Army Wholesale Logistics Literature (AWLL).

f. Organization of AMC. AMC is comprised of the headquarters, MSCs, and various other activities and installations.

(1) Materiel readiness responsibilities are assigned by HQ, AMC to designated MSCs under its control. These MSCs are responsible for the integrated management of their commodities or functions. Integrated management includes—

(a) Research.

(b) Development.

(c) Design.

(d) Modification.

(e) Sponsorship of tests and evaluation.

(f) Initial repair parts planning.

(g) Tools, test equipment, and handling equipment planning.

(h) Technical and engineering supervision and services.

(i) Product engineering.

(j) Production engineering.

(k) Cataloging and standardization.

(l) Direction of procurement and production.

(m) Packaging, handling, storage, and transportation.

(n) Readiness.

(o) Materiel inventory management.

(p) Mobilization planning.

(q) Production base planning.

(r) Preparation of equipment publications.

(s) NET.

(t) Army warranty program.

(u) Army oil analysis program.

(2) The AMC MSCs and their areas of responsibility are—

(a) U.S. Army Armament, Munitions, and Chemical Command (AMCCOM)—armament systems and ammunition (Rock Island, IL).

(b) U.S. Army Aviation Systems Command (AVSCOM)—aircraft (St. Louis, MO).

(c) U.S. Army Communications—Electronics command (CECOM)—communications—electronics systems (Ft. Monmouth, NJ).

(d) U.S. Army Missile Command (MICOM)—missiles, rockets, and lasers (Redstone Arsenal, AL).

(e) U.S. Army Tank—Automotive Command (TACOM)—tracked and wheeled combat, tactical, and general-purpose vehicles, selected construction, and materiel handling equipment (Warren, MI).

(f) U.S. Army Troop Support Command (TROSCOM)—field support items, amphibious vehicles, watercraft, and related railroad equipment (St. Louis, MO).

(g) U.S. Army Depot System Command (DESCOM)—manages all Army supply and maintenance depots (Chambersburg, PA).

(h) U.S. Army Laboratory Command (LABCOM)—manages the corporate research and development laboratories and provides intensive integrated management of the entire AMC technology base (Adelphi, MD).

(i) U.S. Army Test & Evaluation Command (TECOM)—conducts all developmental testing and

evaluation of Army weapons and equipment (Aberdeen Proving Ground, MD).

(j) U.S. Army Security Affairs Command (USASAC)—supports America's security interests and those of its allies through international defense cooperation programs involving hardware, training, and publications. It also manages DOD's participation in selected North Atlantic Treaty Organization (NATO) programs (Alexandria, VA).

g. MSC organization for maintenance.

(1) *General.* The organization of a particular MSC within AMC is somewhat dependent upon the peculiarities of the support structure of the assigned commodity. The following are the functional elements common to MSCs regardless of commodity:

- (a) Maintenance.
- (b) Materiel Management.
- (c) Procurement and Production.
- (d) Project Managers.
- (e) Special Staff.
- (f) International Logistics.
- (g) Resource Management.
- (h) Product Assurance.
- (i) Personnel Training and Force Development.
- (j) Plans and Systems Analysis.
- (k) Management Information Systems.
- (l) Field/Liaison Services.
- (m) Readiness.

The coordination of the above elements is critical. With respect to maintenance, the MSCs have two directors who coordinate and supervise the majority of maintenance engineering and depot maintenance operations. They are the Director for Maintenance, responsible for the national maintenance point (NMP), and the Director for Materiel Management, responsible for the national inventory control point (NICP).

(2) *Scope of NMP operations.* The NMP plays a vital role in system/item development and operation. Through maintenance engineering, design, characteristics and support concepts are built into a new system. The NMP continues to track the system throughout its life-cycle, gathering operational performance data and modifying system support (or coordinating with the system engineer to modify the system) as needed. The NMP is the key to the success of the AMC Maintenance Management Program. Its activities are influenced to a considerable degree by the requirements of the NICP which is responsible for the inventory management of the system. Inventory management includes the procuring, stocking, and issuing of system/item/component and repair parts/tools/test equipment to support the maintenance require-

ments of the system and includes programming the worldwide depot maintenance support requirements. The NMP has worldwide technical maintenance responsibility for a specific commodity or group of commodities (items of similar characteristic; e.g., communications equipment, vehicles, aircraft, etc.). Additionally, the NMP is responsible for providing Army depots with technical working-level direction relative to the maintenance support required for its commodity group. The scope of the maintenance management responsibilities of the NMP extends from the early conceptual stages of materiel acquisition through the design, development, procurement, production, use, and disposal stages. Specifically, the major functions of an NMP are in the areas of maintenance engineering, support planning, publications, and technical assistance (when required). The responsibilities of the NMP for the particular item or commodity continue throughout its life cycle. The operations of the NMP and the NICP must be closely coordinated to ensure adequate technical and administrative resources required to meet the needs of the equipment user and maintenance support elements are available. Appropriate NMPS may be identified by end item national stock number (NSN) as listed in AR 750-1, appendix C.

(3) *Single Manager for Conventional Ammunition (SMCA).* AMCCOM is responsible for DOD-wide maintenance of conventional ammunition and has been delegated the responsibility of performing the operational functions of the SMCA. The AMCCOM Defense Ammunition Directorate serves as the NICP and NMP for Army and SMCA, lethal toxic chemical ammunition, and ammunition peculiar equipment (APE). AMCCOM controls the workload assigned to Army ammunition plants, arsenals, and the Army ammunition activity. AMCCOM and DESCOM negotiate and coordinate workload to be accomplished by depots and depot activities.

h. DESCOM. DESCOM is responsible for the command and control of assigned U.S. Army depots and depot activities. Depot missions are receipt, storage, issue, and maintenance of assigned commodities. Except for SMCA depot-level maintenance managed by AMCCOM, DESCOM manages the use of funds, personnel, physical plants, and equipment required for depot maintenance worldwide. The information needed to manage depot maintenance operations is consolidated in the HQ DESCOM Master File for Maintenance (MFM). The MFM is the source for reports to higher headquarters. Chapter 4, Wholesale Maintenance Operations, provides detailed information on missions and locations of depots and depot activities.

CHAPTER 2

PLANNING FOR WHOLESALE MAINTENANCE SUPPORT

2-1. General. The maintenance plan is a description of the requirements and tasks to be accomplished for achieving, restoring, or maintaining the operational capability of a system, equipment, or facility. The maintenance support plan is normally a part of the integrated logistic support plan (ILSP). Maintenance plans provide many necessary components which make military operations successful. Maintenance requirements are influenced by the threat, the operational plans, and the requirements of the other functions of logistics.

2-2. Depot Maintenance Planning. An organic depot maintenance capability and capacity is established and sustained on the basis of workloads generated by those weapon systems and materiel which are essential to completing the Army's primary roles and missions. It is kept to the minimum level needed to accomplish these essential United States and programmed foreign military sales (FMS) workloads, to include initial surges of 180 days during mobilization and emergencies. It is flexible and capable of rapid expansion to react to emergency military needs. Depot maintenance support is planned and performed using a combination of military and commercial sources (contract). Workload demand projections are based on validated performance standards found in depot maintenance work requirements (DMWR), experience from previous or similar programs, and the depot maintenance support plan (DMSP) for equipment under development.

a. During peacetime, Army depot maintenance capability and capacity is developed and sustained to accomplish not more than 70 percent of the gross DMWRs for mission-essential materiel. The target workload for each Army depot maintenance facility is at least 85 percent of its peacetime capacity (single 8 hour shift, 40 hour week).

b. As stated earlier, the basis for establishment and retention of depot maintenance capability and capacity is the workload demand generated by those weapon systems and materiel essential to completing the Army primary roles and missions. This demand is computed based on the quantity of supported items, and is derived from inventory requirements identified from the Army acquisition

objective (AAO) or distribution requirement (DR), whichever is greater.

c. Not normally considered for depot-level overhaul (ineligible unserviceables) are—

(1) Items scheduled to be type-classified as contingency items or obsolete by the end of the budget year (BY) plus 2 fiscal years (FY).

(2) Items scheduled for depot modification or product improvement by the end of the current FY plus 2 FYs.

(3) Items not reparable within established maintenance expenditure limits (MEL).

(4) Quantities in excess of the AAO.

d. In determining the source of repair (SOR) for a given item, interservice support (called depot maintenance interservicing (DMI)) and/or commercial sources (through a national level contract) are used to complete that depot maintenance workload which exceeds the Army's capacity or capability, or when the Army's capability has not yet been established. The SOR decision-logic process is found in AR 750-2, Army Materiel Maintenance Wholesale Operations.

e. The DMSP is a portion of the ILSP for a new item of equipment requiring depot-level maintenance. The purpose of the DMSP is to ensure provisions for required depot maintenance are identified. This plan identifies all sources to be used for depot maintenance support of the item and the type of workload to be assigned to each source. The plan identifies and schedules the preparation of overhaul standards and procedures (usually a DMWR) as well as the acquisition of peculiar depot maintenance equipment; facilities; test, measurement, and diagnostic equipment (TMDE); and personnel training required to support the item of equipment. In developing the DMSP, consideration is given to using the depot capability of other services. The ultimate objective is to ensure full depot-level maintenance support can be provided for all items identified as depot-level reparable not later than the first unit equipped date (FUED).

2-3. Depot Maintenance Programming. The Army acquisition objective for equipment worldwide is based on the current and planned force structure. The Defense Consolidated

Guidance and the Army Guidance provide input for this calculation yearly. From this guidance, the Army also develops its distribution plans. In computing requirements, materiel is separated into major and secondary items. For major items, the Army Materiel Plan (AMP) is used to compare total requirements needed to support the force structure against the Army's on-hand inventory. This is accomplished annually by AMC in accordance with guidance provided by the Office of the Assistant Secretary of the Army (Research, Development, and Acquisition) (ASA(RDS)). The requirements for secondary items are determined by a demand analysis displayed on a supply control study. The requirements for secondary items which are components of major items are adjusted based on the density of the supported major item. Troop strength is used in determining the gross requirement for those secondary items issued on a per-individual basis. The establishment of a depot maintenance requirement is made only for those unserviceables which are determined to be repairable.

a. Depot maintenance requirements are determined by the commodity commands of AMC. For secondary items, they determine whether the existing inventory, less anticipated unserviceable returns from the field, plus the sum of all sources of supply can meet the requirements objectives. The existing inventory is known. Anticipated unserviceable returns from the field are determined through an analytical process (discussed later), or through evaluation programs where items to be overhauled are physically evaluated—combat vehicle evaluations (CVE) and aircraft condition evaluations (ACE).

b. The sources of supply available are either deliveries from new procurement or deliveries from maintenance. Deliveries from maintenance are computed by adding the beginning of the year unserviceable on-hand assets and the eligible unserviceable returns from the field, and then subtracting the unserviceable asset losses (washouts). These losses are based on the projected in-use quantity of major items and a historical factor computed by the Army's Systems Integration and Management Activity (SIMA). It should be noted that as the Army's operating tempo changes, it will have a significant impact on the generation of unserviceables from the field.

c. If the gross requirement cannot be met through depot maintenance (either DOD organic or contract) due to funding constraints or capacity, new procurement will be required. Major item quantities designated for depot level maintenance are computed by the commodity commands

and are displayed on Operational Plan Summary (OPS-25) documents. The OPS-25 separates requirements by two sources of repair: organic and contract, and further divides them into financed and unfinanced portions according to funding constraints. The gross requirements for secondary items which are components of major items are computed based on the major item in-use density through a supply control study.

d. In programming for depot maintenance, the following priorities are used:

(1) Support of reparable secondary items and components.

(2) Modification/conversion of end items and secondary items.

(3) Overhaul and repair of new Force Modernization end items.

(4) Overhaul and repair of all other end items.

e. Once the OPS-25 is completed, HQ AMC submits it to the DA ODCSLOG to support preparation of the Army's Program Objective Memorandum (POM) and the Army Budget Estimate (ABE). This will usually coincide with HQ AMC's budget and Program Assessment Review Report (PARR) submission to HQDA.

f. Other major Army commanders and heads of DA Staff agencies coordinate special requirements for depot maintenance support with AMC. As an exception, the Reserve Components' depot maintenance support program of repair and return to the user is controlled by the Reserve Components and coordinated with the ODCSLOG.

2-4. Industrial Preparedness.

a. Industrial preparedness denotes an ability to manufacture or maintain materiel in an industrial facility, whether the facility is commercial or Government owned (organic). The Army is concerned both with the production capacity of commercial sources and their capacity to perform depot maintenance during and after mobilization. The maintenance capacity of organic depots, on the other hand, is used primarily for maintenance and not for manufacture. Depots manufacture components or parts which are not readily available from manufacturers to meet overhaul schedules.

b. The intent of industrial preparedness is to provide industrial capability and capacity sufficient to sustain varying levels of combat, including full-scale war, without costly duplication of facilities or excess capacity. Both commercial and Government-owned sources are appropriate for use during and after mobilization to provide adequate capacity to supply the needed materiel. Organic capability is often established to ensure the Army possesses the quality of technical information and

experience necessary to maintain and operate a particular item. Organic capacity seldom exists, however, to perform the volume of work which will be required for mobilization. Though organic facilities will expand their capacity to meet urgent requirements, commercial facilities will still be required.

c. Industrial preparedness is concerned with the existence of a readily available capability for industrial operations. This is particularly crucial, as there is not sufficient time to establish new industrial capabilities upon mobilization. The extent to which mobilization increases the industrial requirement is dependent upon several factors:

- (1) Intensity and longevity of combat.
- (2) Degree to which the inventory is stocked.
- (3) Mortality rates of various items of equipment.

2-5. Depot Maintenance Mobilization Workload. AMC MSCs determine the depot maintenance mobilization requirements for combat essential items. These requirements are provided to DESCOM, which assigns the work to the appropriate depots. The depots analyze the workload and notify DESCOM of any requirements which cannot be accommodated. These excess requirements are reported to the appropriate MSC, with information copy to AMC, for inclusion in commercial industry's or interservice mobilization requirements.

2-6. Interservice Support. Wholesale interservice support includes all wholesale actions which result in the provision of materiel, facilities, or services between military services or between a military service and a Federal department or agency. This support may be the result of formal agreement, such as a depot maintenance interservice support agreement (DMISA), or it may be more informally established, as by a Memorandum of Understanding (MOU). Interservice support makes available to a service which is a minority user of an item the advantages inherent in the logistics system of the service which happens to be the majority user of the item, thereby reducing equipment downtime, logistics pipeline inventories, and investment and operating costs. Army equipment common to another service should be considered for interservice support to the extent that an organic Army capability and capacity are not required. The criteria for selection of a service depot for maintenance are capability, capacity, and economy. An item used by one service may be maintained by another service.

2-7. Host Nation Support. Host nation support is a support arrangement in which the military and industrial forces of one nation (the host) support the military operations of another. This support can be of utmost importance to the wholesale maintenance planner if carefully planned and agreed upon in advance. Its use in maintaining common equipment or in providing other readily available support releases organic resources to perform other tasks. It tends to increase the amount of wholesale support and GS level maintenance available for supporting the combat forces. Plans to use host nation support are successful in contributing to materiel readiness when they take into account the realities of war's effects upon a host nation's ability to provide assistance. Such planning must consider the stability of the host nation; nature of the threat; language, procedures, test equipment, tools, and parts required; and availability of other sources of maintenance support.

2-8. Contract Maintenance. Contract maintenance is performed under contract by commercial organizations on either a one-time or continuing basis. It provides an effective means for augmenting the Army's resources in accomplishing materiel maintenance. This does not mean that contract maintenance is a substitute for bad planning; on the contrary, it can only be helpful if it is preceded by, and implemented with, effective logistics planning. A contractor requires the same resources as an organic Army facility, to include tools, repair parts, facilities, plant equipment, qualified personnel, and sufficient time to plan required maintenance operations. Contract maintenance is a necessary component of industrial preparedness, and must be planned and employed in a manner which will be effective under wartime or emergency conditions. Contract maintenance may be performed by a contractor using Government-owned, contractor-operated (GOCO) or contractor-owned, contractor-operated (COCO) facilities. The MSCs are responsible for planning and awarding contracts for depot maintenance.

2-9. Automation.

a. The management of logistics—both wholesale and retail—ultimately entails the management of data, and its subsequent translation to information from which decisions can be made. The 1980s have witnessed a significant increase in automation capabilities, enabling logistics planners and managers to more effectively and efficiently support the soldier in the field. The blueprint for manag-

ing the development and fielding of emerging automated logistics systems is the Logistics Automation Master Plan (LAMP), published each June by ODCSLOG, HQDA.

b. Increasing use is being made of automatic data processing (ADP) techniques in managing and operating the Army's maintenance system. This automation extends much further than merely data processing, however. Automated techniques are being used for communications, printing, training, and the storage and retrieval of information. Maintenance—a function of logistics—is largely dependent on the timely and accurate reporting of data in order to manage properly the Army's resources. The automation of maintenance data provides the Army the ability to provide more responsive supply and maintenance support. Maintenance automation spans all levels of maintenance, from the input of data in the field at the unit level, through the projection of maintenance (and hence, supply) requirements in the formulation of strategic plans, budgets, and the development of the Army's force structure. The impact of automation upon maintenance management is immense. Collection of performance data, determination of requirements, command and control, communications, and financial management are highly dependent on automation. The volume and sophistication of data which are required to manage maintenance preclude manual handling of this information. The use of automation will continue to increase as centralization of management increases and the need to "do more with less" continues.

c. The dependency upon automation demands that ADP and associated communication systems be capable of satisfying the maintenance management requirements during wartime. This requires that the systems be designed to perform as designed during hostilities and be protected from combat damage.

d. ADP systems must be designed to ensure minimum turbulence in the transition from peace to war. To operate in war as we do in peace requires that the user need not learn any new tasks upon mobilization.

e. Maintenance data pertain to the information which a system generates during day-to-day operations. This information, reflected in reports of various types, is used by maintenance managers to determine program performance levels. Management data serve many purposes. When made available on a timely basis, they are indispensable to effective life-cycle management of systems and equipment. These data are required to conceive, define, develop, test, and acquire an item or a

system, and to maintain and support it properly. Management data provide maintenance managers with information required to evaluate the readiness availability status of equipment, readiness posture of a unit, adequacy of resources, and cost-effectiveness of maintenance operations. By carefully analyzing management data, maintenance managers are able to isolate problem areas to make adjustments necessary for desired improvements. Analyses of these data enable managers to appraise current managerial concepts and operating procedures. As a result of this appraisal, the manager may employ modifications of those concepts which are producing the desired level of operational efficiency in other areas.

f. The primary aspects of maintenance are those of maintenance operations and maintenance engineering. Maintenance operations encompass the management, physical performance, and assistance provided to users in maintaining materiel in the Army inventory. Maintenance engineering is directed toward influencing the design of existing and developmental materiel to ensure that maintenance can be performed in an economical and effective manner, and identifying those maintenance support requirements necessary to support materiel.

g. The primary systems used to assist in the management of maintenance operations at the retail level are the Unit Level Logistics System (ULLS) and the Standard Army Maintenance System (SAMS). At the wholesale level, the principal systems are the Commodity Command Standard System (CCSS) and the Standard Depot System (SDS).

(1) *ULLS*. The ULLS automates several logistics functions at the unit level. In addition to supply management, ULLS provides the unit commander with a comprehensive means to manage the unit's maintenance operations in the areas of prescribed load list (PLL), operational records, maintenance records, historical records, as well as usage and readiness reporting. It is designed to interface with SAMS as well as the Standard Army Retail Supply System (SARSS), thus providing maintenance and supply managers at higher levels the data necessary to accomplish their missions to support the unit. This is presently accomplished through the transfer of data on floppy disk from ULLS to SAMS and SARSS.

(2) *SAMS*. The SAMS is oriented toward all other levels of maintenance. At DS and GS maintenance units, SAMS-1 provides for the control and management of the units' operational mission. It also forwards specific maintenance information to Division, Corps, and Theater Army Materiel

Management Centers (MMCs). SAMS-2, used by these MMCs, provides the visibility required to effectively manage the equipment assigned and to ensure the support units are capable of accomplishing their assigned missions. SAM-W is the wholesale level interface with the retail customer.

(a) *SAMS-1*. Found at DS and GS maintenance units, this system automates the management of work orders, the tracking of serial numbers, the management of bench stocks and operational readiness floats, requisitions, the scheduling of maintenance, and the management of supply functions in support of the units' maintenance mission. It is designed to interface with ULLS as well as SAMS-2, SARSS, and other Standard Army Management Information Systems (STAMIS) to provide necessary management information. It is the channel through which unit level logistics information is provided.

(b) *SAMS-2*. Predominantly found at MMCs, this system is also located at selected support battalions. It is oriented toward the management of maintenance at a larger scale than that of SAMS-1, and enables managers to track workloads, equipment status reports, work order cost data, and ORFs. It also allows the materiel manager to evaluate the effectiveness of maintenance operations through periodic management reports and inquiries. SAMS-2 provides the interface between the retail and wholesale systems.

(c) *SAMS-W*. This system, found at the Materiel Readiness Support Activity (MRSA), performs the function of collecting maintenance information from the retail community and placing it into various databases which are used by both the retail and wholesale communities. It provides information required for the making of policy decisions, the technical and engineering analysis of equipment, life cycle-evaluation, operation and support costing, and resource allocation at the national level.

(3) *CCSS*. The CCSS is located at the six AMC commodity commands and provides for the management of secondary items and repair parts at the national level. The Maintenance Data Management System (MDMS) is a major element of CCSS. It furnishes the wholesale maintenance manager with the means to forecast depot maintenance requirements and ensure the necessary secondary items and repair parts are available when required.

(4) *SDS*. The SDS, located at each of AMC's depots, automates the management of the depots' functions, one of which is depot maintenance. It automates the scheduling, tracking, controlling, and reporting of depot maintenance programs at

the depot. It provides a limited interface with the MDMS.

h. Maintenance engineering. Maintenance engineering is that function of maintenance directed toward influencing the design of existing or developing systems to ensure maintenance can be performed in an effective and economical manner. It also identifies those logistic support requirements needed to provide necessary maintenance on equipment being fielded. Maintenance engineering is a principle element of integrated logistics support (ILS). It is performed under the direction of the NMP at each of the six AMC commodity commands. AMC depots, contractors, and MRSA also perform specific maintenance engineering tasks as assigned by HQ AMC and the NMPs. The collection of maintenance engineering data is accomplished through SAMS and ULLS, as well as several other nonstandard systems in use at the installation and MACOM level. Data is also collected through sample data collection—a very time-consuming and expensive method. Much of the data required for maintenance engineering will be found through SAMS-W, the Work Order Logistics File (WOLF), and the Army Data Validation and Netting Capabilities Establishment (ADVANCE).

(1) *ADVANCE*. ADVANCE was created to provide logistics managers, researchers, and equipment analysts one-stop access to the entire spectrum of databases and information records available on fielded equipment. Selected data from appropriate logistics databases are used to produce key equipment management information. The system will have access to Logistic Support Analysis Records (LSAR), test data, and other engineering data which will enable users to validate estimates, conduct comparison studies, and update performance histories of selected major items and components. It will become the AMC corporate database and system for maintenance engineering analyses of existing and developmental systems. It will also provide support to the Army community by providing database inquiry capabilities at the national, wholesale, and retail levels. It will be the single point of access to diverse data sources; enable analysis of equipment reliability, availability, and maintainability (RAM); provide data from all maintenance levels, as well as supply and maintenance usage data; and conduct automated analyses and queries of maintenance programs.

(2) *WOLF*. The WOLF is a centralized national-level database of table of organization and equipment (TOE) DS and GS work order information. Customers can use WOLF to access current information on significant fielded end items and their associated components. For se-

lected items of equipment, the database provides information on total downtime, mean downtime, mean time to repair, repair parts consumption (by NSN), repair parts costs, as well as labor costs. This information can be stratified by unit identification code (UIC), supporting UIC, MACOM, or even a serial numbered end item.

2-10. Supply Relationships. The maintenance and supply systems are closely linked, since the output of one affects the other. All levels of maintenance are customers of the supply system. Also, all levels of maintenance place materiel back into the hands of the user. At the wholesale level, maintenance is considered a source of supply.

a. Repair parts. The NMP responsible for an item predicts requirements for repair parts. Using those predictions, the NICP plans to make parts available.

(1) *Retail.* Recommended initial repair parts stockages are established based on provisioning data developed during logistic support analysis (LSA) on new equipment. Data generated and based on the maintenance concept, failure factors, essentiality, or safety factors are used to establish recommended support list allowance card (SLAC) decks which proposes stockage at PLL and authorized stockage lists (ASL) levels. The gaining commander and MSC negotiate the specific items and quantity of each to be included on the SLAC. The PLLs and ASLs are critical in supporting the maintenance mission to provide materiel readiness. A sufficient quantity must be stocked to be compatible with resupply operations, but it must not limit the unit's mobility or otherwise interfere with performance of the mission.

(2) *Wholesale.* The NICP supplies repair parts for depot maintenance based upon historical usage data and engineering data developed by the NMP.

b. War reserves. War reserves provide the interim support essential to sustain operations until industry can meet all post D-day consumption. War reserves are used for—

(1) Fill of post D-day combat consumption requirements.

(2) Replacement of mobilization training losses.

(3) Issue to mobilization units.

(4) Support of allied nations through security assistance.

c. Prepositioning of materiel configured to unit sets (POMCUS). POMCUS is a set of equipment stored in the theater in the proper quantities for immediate issue to a particular deployable unit. It differs from normal theater war reserves in that POMCUS stores the unit's equipment in one loca-

tion; war reserves are generally stored by commodity, rather than by unit. POMCUS stocks are intended to be maintained in ready to issue status, thus achieving a high degree of readiness. This is crucial in today's "come as you are" environment.

d. Direct Support System (DSS).

(1) The DSS provides area-oriented depot support to the overseas retail supply system. It uses high-speed communication and air and sea shipments direct from designated CONUS area-oriented depots to OCONUS general support units/direct support units (GSUs/DSUs). DSS in wartime is restricted to air lines of communication (ALOC) class IX supply (repair parts) and selected class II items (maintenance related tools and equipment). Broad objectives of DSS are to increase supply efficiency, responsiveness, and asset visibility while decreasing inventories and timelags in the supply pipeline. Specific objectives of DSS are—

(a) More efficient use of resources.

(b) Improvement of requisition response time by reducing order ship time (OST).

(c) Reduction of inventories without degradation of materiel readiness.

(d) In-transit asset visibility and control.

(e) More efficient use of communication and transportation techniques.

(f) Containerization of materiel for shipment.

(g) Reduction of stockage vulnerability in theater to air or nuclear attack.

(2) Although some OCONUS inactive depot stockage is retained (war reserve, safety level, and operational project stocks), most support unit supply requirements are met by direct delivery from CONUS depots, bypassing overseas theater depots and break bulk points.

e. Rx.

(1) Rx is the exchange of a serviceable repairable module (from the Rx activity) for an unserviceable repairable one (from the user). Such a module is an item assembly, subassembly, board/card, or component designated as a single unit to facilitate and simplify production line techniques, transportation, supply, and maintenance. A standardized Rx system establishes Army-wide policy guidance and management techniques for those supply and maintenance actions essential in the execution of the Rx program for repairable/recoverable modules in an efficient, responsive, and cost-effective manner.

(2) Rx procedures allow a user to obtain serviceable modules from a supporting Rx activity with minimum paperwork and administrative burden; this, in turn, frees the user from detailed

piece-part repairs and excessive parts stockage.

(3) The objectives of Rx include—

(a) Improve operational readiness.

(b) Establish a standardized system integrated into the army supply system which incorporates simplified administration and accounting, based on a one-for-one exchange.

(c) Provide support for class IX and missile RX modules.

(d) Establish mandatory stockage levels of essential RX modules at each RX point and supported organizations.

(e) Obtain total asset visibility of both unserviceable and serviceable recoverable modules on-hand from DS to wholesale logistics levels.

(f) Provide for a single issue system for recoverable coded materiel in each exchange loop.

(g) Establish RX loops between users and supporting (DS and GS) maintenance units.

(4) DS, GS, and theater levels for reparable assets for newly fielded equipment will be established by the wholesale manager for each fielded system.

f. Maintenance floats. Float is a quantity of selected items of equipment authorized to replace like items evacuated for maintenance. One primary purpose of the float is to maintain the operational readiness of supported units in peacetime. There are two types of float: repair cycle float (RCF) and ORF.

(1) RCF is a quantity of items authorized for stockage at the wholesale level of the supply system. It is used to replace items undergoing scheduled depot maintenance.

(2) ORF is that quantity of items authorized for issue to MACOMs for use by DS maintenance units in exchanging with supported units if a like item cannot be repaired in a timely manner.



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CHAPTER 3 MAINTENANCE ENGINEERING

3-1. Maintenance Engineering During Development. Maintenance engineering during the development of materiel and systems determines where, when, how, why, and by whom maintenance action will be taken to retain equipment in, or restore it to, serviceable condition. It develops concepts, criteria, and technical requirements during the development of new items. These are applied during production and deployment for timely, adequate, and economic maintenance support of equipment and systems.

a. Maintenance engineering participates in the planning and development of equipment to minimize the need for maintenance resources. Effective maintenance participation significantly influences design configuration which, in general, dictates support investments and operating costs associated with new equipment. A valuable input to maintenance engineering is historical data on similar items, components, and assemblies. The most valid data are sought from industrial sources, test data, and special reporting systems. These data, properly screened, arranged, and analyzed, provide insight into maintenance requirements and support characteristics expected from the system.

b. Information which can be obtained from historical data includes ratio of man-hours to elapsed maintenance time, ratio of maintenance time to operating time, man-hour utilization by skill and maintenance level, and computation of the mean and variance for maintenance man-hours. Analysis of these data may indicate the need for actions to improve supportability of a like item under development. Such actions may take the form of incorporating design changes or support constraints, establishing different support procedures, reducing or increasing the scheduled maintenance and inspection requirements, and changing requirements for personnel, tools, and test equipment in malfunction diagnosis, troubleshooting, and repair procedures.

c. Maintenance is involved early in the process of development, specifying criteria by which both logistics and support considerations will affect design and configuration of a new item.

(1) The technical, military, and economic bases, and the overall feasibility of the development concept are established through comprehensive studies which are performed by various activities.

Proper testing procedures are developed as a result of the identification of critical, technical, and operational issues.

(2) Interfaces between the developing system and other systems, whether existing or planned, are defined while support equipment requirements are identified. Quantitative and qualitative requirements for items are determined, and the means for adding the materiel to the Army inventory are considered.

(3) Systems must be maintainable under combat conditions. Maintenance engineering predicts battle damage failures of system components. This information is used to estimate wartime repair part requirements and to identify those maintenance actions required in wartime. Through the BDAR Program, special repair procedures are developed which allow a damaged system to be returned to combat.

d. The maintenance engineering effort during materiel development is concerned with designing equipment which is cost effective and easily maintained. This effort is complicated by the related support elements which must be fully considered. The overall development of the various support elements is accomplished through an ILS program which includes—

- (1) Design influence.
- (2) Maintenance planning.
- (3) Manpower and personnel.
- (4) Supply support.
- (5) Support equipment and TMDE.
- (6) Training and training devices.
- (7) Technical data.
- (8) Computer resources support.
- (9) Packaging, handling, and storage.
- (10) Transportation and transportability.
- (11) Facilities.
- (12) Standardization and interoperability.

e. Maintenance engineering impacts on each of these elements, and, in fact, the ILS process advocates that maintenance engineering become the “motivator” or “integrator” of all support elements. A close coordination must exist between maintenance engineering and contractors submitting proposals for production of the equipment. In many instances, contractors may propose support

concepts for consideration which differ significantly. After these proposals have been evaluated, a final production contractor is selected, establishing the framework for fully developing all maintenance support elements and the interfaces with other logistics functions.

f. LSA is a principal tool in implementing ILS. The LSA process provides the logistics manager with the information necessary to integrate logistics considerations into the design effort and to ensure all elements of the logistics support system are planned, acquired, tested, and deployed. LSA is the set of systematic and comprehensive analyses which serve to identify support criteria and support system requirements. These represent a composite of many technologies (design, reliability, maintainability, system engineering, etc.) used in the definition of support requirements and the injection of support criteria into the acquisition process. These analyses represent the single logistics analytical effort and serve as the interface between materiel design and support planning. When the LSA is implemented, actions are taken to identify, define, analyze, quantify, and process logistics support requirements. This analysis process evolves as the acquisition program progresses. The number and type of iterative analyses vary according to the program schedule and complexity.

g. Operational readiness, maintainability, and reliability are engineering design requirements. Engineering ensures the development of data which lead to a proper balance between costs, system performance, and support. Reviews and tests provide feedback concerning required changes in design which, in turn, must be analyzed and incorporated into the hardware. Any corrective engineering measures uncovered must be applied as quickly as possible, and the effectiveness of the improvement must be tested, ensuring maintenance requirements are met and improvement is achieved through reduced failure rates, increased operational readiness, or a related gain. The maintenance engineer is primarily concerned with minimizing later maintenance activity, incorporating the most reliable components, modular construction, and built-in test indicators. The aim is to achieve a design which will eliminate or minimize any deficiency which hinders ease of maintenance.

h. An analysis of all the maintenance tasks which can be performed on an item precedes the allocation of those tasks to the appropriate level of maintenance. The analysis addresses the time required to perform specific maintenance tasks; determines the skills required to perform the tasks; and identifies the facilities, equipment, and

repair parts required. The resulting maintenance task allocation must be made known to personnel having maintenance, supply, and support responsibility. This allows the support rationale of the development phase to be implemented in the operational phase.

i. The maintenance allocation chart (MAC) embodies the maintenance concept developed by maintenance engineering for a given system. For each component, assembly, and subassembly of the end item, the MAC identifies the maintenance operations which can be performed and assigns those operations to the appropriate level of maintenance. It lists time standards for each maintenance function, as well as the tools and test and support equipment needed to perform the function. The MAC is in the technical manual (TM) containing organizational maintenance instructions. The repair parts and special tools required to perform the maintenance functions, as identified in the MAC, are contained in the repair parts and special tools list (RPSTL), another maintenance publication for the system. The MAC and the RPSTL impact significantly on the supply and maintenance function, as they serve as the starting point for the selection of repair parts and stockage of those parts at the appropriate levels of maintenance.

3-2. Materiel Fielding. Service to the field is based on timely and effective development of an end item for total package fielding (including all component major items and basic items) and a complete support package. Failure to consider even one minor component of a system may cause delay in fielding until proper fabrication, test, and installation can be completed. It is essential to first determine that a positive, supportable design which is economically feasible and technically supportable can be developed.

a. General. Materiel fielding consists of that portion of the life-cycle management model (LCMM) which prepares for placement of new equipment and systems in the field. The actions completed during the earlier phases of the LCMM were designed to simplify this process. Materiel fielding documentation necessary for successful fielding includes—

- (1) Army Modernization Information Memorandum (AMIM).
- (2) Modernization Resources Information Submission (MRIS).
- (3) Force Modernization Master Plan (FMMP).
- (4) Memorandum of Notification (MON).
- (5) Materiel Fielding Plan (MFP).
- (6) Mission Support Plan (MSP).

technical assistance personnel, special skills, contractor personnel, training of technicians, and related costs for each materiel approach are identified and carefully evaluated. The logistics assistance program is less likely to affect concept selection than are some of the other support elements. However, it is a major support element and can have a significant effect on total life-cycle costs. Logistics assistance is normally applied during the operations phase of the system life cycle. System support managers provide such assistance to support international logistics obligations by contract or through in-house capability, depending on scope or requirement, degree of urgency, and capability of providing needed personnel.

b. The Readiness Directorate (NMP for nuclear) maintains expertise at designated commands which provides a central inquiry bank for logistics support matters relative to fielded systems. These activities serve as the highest level of expertise available to provide logistics assistance to installations and organizations in CONUS and OCONUS. Through direct communication with the user or maintenance activities at the lowest level, extensive pinpoint assistance can be provided as well as accumulation of data which results in product improvement. The NMP will provide assistance, when that level of resolution is required, to include on-site assistance.



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- (7) Materiel Fielding Agreement (MFA).
- (8) Special support service (to include Materiel Fielding Team (MFT)).
- (9) Transportability approval (TRAP).
- (10) Material release.
- (11) Maintenance publications.
- (12) Operator manuals.
- (13) Supply bulletins (SB).
- (14) Technical bulletins (TB).
- (15) Repair Parts Stockage Recommendation

The materiel developer is required to prepare a Material Release Statement certifying that the new system can be supported and is ready for fielding.

b. NET

(1) Planning for NET occurs as early as possible in the development process, since NET is an essential link between the materiel developer and the users of the new equipment. The objective of this early planning and programming is to ensure trained personnel are available for testing and evaluation efforts and qualified personnel are available to the using units concurrent with the fielding of the hardware. The materiel developer develops a training program designed to qualify an instructor cadre team in the operation and maintenance of the new item or system. This cadre, in turn, trains additional instructor personnel who will constitute the training base for resident training in TRADOC schools system. Thus, skills obtained and developed in the wholesale community are passed on to the retail community in time to train the ultimate user concurrent with receipt of hardware. Frequently, the timing of new equipment deployment is such that the TRADOC schools are unable to have trained people on hand in using units when new equipment arrives. When this situation occurs, a New Equipment Training Team (NETT) is sent to the field to train the receiving units in the operation, maintenance, and mission-employment of the equipment. The goal of such training, although not military occupational specialty (MOS)-producing, is to develop proficient users and support personnel who are capable of operating and maintaining deployed items or systems at full operational capability.

(2) The NET Plan will also contain provisions for training depot maintenance personnel, when required. Normally this training will be conducted by the manufacturer of the system.

(3) While NET is normally associated with new equipment, training may be required for equipment redistributed as a result of product improvement or the application of modification work orders (MWO).

3-3. Maintenance Engineering After System Deployment. Effective controls must be established and maintained to minimize deterioration of RAM during supply and maintenance activities and operational use. The operational phase also creates technical knowledge for resolving problems and for product improvement. The following elements must be executed:

- a.* Effective collection, analysis, and followup of defective parts replacement data.
- b.* Timely identification and resolution of problems, to include product improvements, is the objective of this effort.
- c.* Effective controls over parts substitution during maintenance operations.
- d.* Periodic stockpile reliability evaluation of selected items.
- e.* Evaluation of the effects of repetitive maintenance.
- f.* Effective program to control application of approved modifications.
- g.* Continuous or periodic assessment of RAM characteristics based on operational use data.

3-4. Performance Data. Data feedback from the field is generated and reported to continuously monitor and evaluate a deployed item or system.

a. Data are gathered worldwide, examined, and evaluated using statistical methods. One method of generating maintenance data is sample data collection (SDC). During system development, an SDC plan is considered for each new or modified system. Uses of resulting data include evaluation of equipment failure frequency and cause, failure trends, and time required for repairs. These data relate to the RAM studies of earlier phases and are useful in developing repair standards and in forecasting repair parts, labor, and total maintenance effort requirements. Economic studies may be made to compare actual field results against projected goals. They are also used in determining whether to repair or purchase a replacement item. Such economic comparisons are of value in developing future similar systems. Area density and usage reports are used to assist in forecasting depot overhaul requirements. In addition to SDC, The Army Maintenance Management System—Aviation (TAMMS-A) requires the serial number tracking of selected aircraft components and parts. These items are required to be reported at all levels of maintenance upon component removal, repair, or installation. This information not only tracks the selected items, it is also used for RAM studies as well as aiding users in avoiding over

usage of items which should be changed based on time usage.

b. The Manpower Requirements Criteria (MARC) Program (AR 570-2) prescribes procedures and quantitative data for determining minimum essential personnel position requirements for combat support and combat service support functions in TOE units. This manpower data is developed from historical data or through a system-designated SDC program or general field data collection effort.

c. Of particular importance to maintenance management are the various usage and maintenance data generated under the reporting procedures of The Army Maintenance Management System (TAMMS). The uses of TAMMS data include—

(1) Assess performance of new equipment in terms of reliability and maintainability.

(2) Evaluate effectiveness of maintenance support and adequacy of resources allocated for maintenance.

(3) Ensure configuration control.

TAMMS data provide input for managing the maintenance aspects of a deployed item or system throughout useful service life. In fact, these data may be essential in determining when useful service life has ended from a cost of maintenance point of view. Collection and analysis of RAM data are essential elements in evaluating maintenance performance.

d. Data feedback from field commands provides an essential element for management of an item or system throughout its useful life. Decisions to modify, change, improve, or dispose of an item or system require such feedback for effective monitoring and evaluation from production to disposal. Feedback from the field is of value not only to trigger changes and improvement in hardware and operational concepts, but also in evaluating other aspects of the total system such as training, doctrinal, and technical literature; basis of issue plans (BOIP); TOEs; and training programs at all levels.

3-5. Equipment Improvement Recommendations (EIR). EIRs are provided by users to the NMP having responsibility for the equipment. Prompt action by the NMP is evidence that the information provided by users is important to the correction of failures, deficiencies, and shortcomings as well as to the development of new systems, the ongoing analysis of existing systems, and the sustainment of materiel readiness.

a. The EIR is a means for the user to propose changes to equipment which will improve its oper-

ability. Since the majority of the experience with equipment resides with the user, this represents a well-recognized source of recommended improvements.

b. The EIR is feedback data on equipment which has experienced failures, deficiencies, and shortcomings due to faults in design, operations, and/or manufacture. The faults may cause partial or total failure during field use. Users report these deficiencies to obtain corrective action on the reported materiel. This report initiates the purging of similar deficient materiel from the supply system and enables corrective action to preclude recurrence of the identified deficiencies. EIRs ensure actual experience is incorporated into research, design, development, and production efforts on new equipment to provide more realistic determinations of component replacement rates, repair cycle time, maintenance float requirements, maintenance and supply problems by geographical areas, and repair parts stockage levels. Because of the relationship of high equipment readiness and the readiness posture of a unit, EIRs are reviewed, analyzed, and acted upon without delay.

3-6. Logistics Assistance.

a. Logistics assistance is a field service provided to military equipment users/support personnel on a world-wide basis by experienced and technically trained supply and maintenance personnel. Although field commanders at all levels are responsible for developing an organic capability to perform supply and maintenance functions, much of today's technology demands that highly specialized technical assistance be provided. Assistance in developing this capability or solving problems beyond the control of field commanders is provided either by highly skilled DA civilians, military personnel, or by field service representatives. Logistics assistance programs are controlled and operated on a worldwide basis by elements of the Readiness Directorate of the AMC MSCs. The Readiness Directorate serves as both the focal point for assistance to the field, and as the conduit between the field and other MSC elements for assistance requiring that level of resolution. Hence, the NMP would provide assistance or respond to those inquiries concerning maintenance. (NOTE: The logistics assistance function has been transferred from the NMP (Maintenance Directorate) in most MSCs.) It is not uncommon to have facets of a technical assistance program pertaining to newly introduced and highly complex systems operated by the prime contractor under specific terms of the development-production contract. During early development, future requirements for

CHAPTER 4

WHOLESALE MAINTENANCE OPERATIONS

4-1. General. Wholesale maintenance operations possess the most sophisticated maintenance capabilities available to the Army. Most wholesale operations are conducted in fixed facilities, using complex skills in an industrial environment, but, when required, provide maintenance support onsite to the retail system.

4-2. Depot Maintenance Operations.

Depot maintenance operations support the overall DA inventory management program. They are used as an alternative or supplement to new procurement as a source of serviceable materiel to meet DA materiel requirements. Programs for the depot maintenance of materiel, except those for the repair and return to user of equipment of the Reserve Components, are approved by HQDA and controlled by national level materiel managers under the monitorship of the DCSLOG. The Reserve Components' repair-and-return-to-user depot maintenance program is controlled by Office of the Chief, Army Reserve (OCAR) and ARNG; and coordinated with Forces Command (FORSCOM), AMC, and DCSLOG, DA. Approved depot maintenance programs are executed by designated Army facilities, by agreement with other military services, and by contractual arrangements with commercial firms.

4-3. Elements of Depot Maintenance.

Depot-level maintenance requires more extensive shop facilities, more specialized equipment, and more highly skilled personnel than those required by lower levels of maintenance. Depot maintenance requires the following elements:

a. Unserviceable materiel. Unserviceables are generated rapidly in the early days of war; they must be overhauled by depot maintenance and returned to combat quickly to ensure supply availability. Close coordination must be performed with supply and transportation to reduce time lost to transportation and handling.

b. Repair parts. Depot maintenance operations routinely consume large quantities of repair parts. Provisioning and forecasting for this consumption must take into account wartime consumption rates.

c. Obligational authority. Authority to expend funds is used as a control mechanism and ensures that scarce financial resources are used in a method which improves readiness.

d. Tools, test equipment, facilities, manpower, and technical documentation. These resources provide a depot facility with the capability to refurbish an item of equipment. Their necessity is foreseen and planned for in advance of the date they are needed to support the equipment.

4-4. Organic Facilities. Army facilities which perform wholesale maintenance are generally depots, arsenals, and ammunition plants (fig 4-1, 4-2, and App-B). Depots have the most all-encompassing responsibility for wholesale maintenance operations; arsenals and ammunition plants have a large mission to manufacture weapons and ammunition, respectively, and a more limited mission to perform maintenance of items for which their special capabilities are needed.

a. Expansion. Organic facilities are retained in such a state as to allow expansion of capability and capacity during national emergency. Capacity is increased by working longer or additional shifts and hiring additional personnel. Capability may also be increased by acquiring additional personnel, but the availability of certain skills may be severely limited. Since defense contractors will be attempting to hire similar skills at the same time, competition for personnel will be severe.

(1) *Augmentation of depot work force.* Wholesale maintenance relies on National Guard and Army Reserve units to support the depot maintenance mission. Trained units and individual personnel are employed to augment the depot maintenance work forces as soon as possible during mobilization.

(2) *Limiting factors in expansion.* Limited facilities, tools, and test equipment will cause delays in increasing the Army's industrial strength during mobilization. Plant equipment or other equipment stored as war reserve will be used as required, but many items will not be obtainable for months or years, under the best conditions.

(3) *Aviation classification repair activity depots (AVCRAD).* A form of expansion of depot maintenance is the planned use of aviation classification repair activity depots to classify and repair specified aviation equipment for rapid turnaround to the troops in forward positions.

b. AMC support to mobilized forces.

(1) During the early stages of a contingency, forces supported by POMCUS depart the CONUS and are transported to the sites of their respective

equipment. Selected forces then mobilize at predetermined locations throughout CONUS and are outfitted with the equipment remaining after departure of the POMCUS units. This equipment, called POMCUS unit residual equipment (PURE), must be made ready for deployment as rapidly as possible. The installation maintenance activity provides a concerted effort to perform the maintenance required to make equipment combat ready. Expeditionary supply support to such mobilization centers is provided by the AMC.

(2) While it is not anticipated that extensive depot level maintenance will be accomplished, an assessment of component repair at the depot level is required in order that contingency plans may be developed to ensure depot facilities can be activated on short notice. This capability, coupled with the technical assistance available from the depot level, will expedite mobilized units achieving the desired state of readiness for deployment.

4-5. Contractor Facilities.

a. General. Just as the wholesale system relies on civilian industry for procurement of new items, the resources of industry are also available for maintenance contracts. It is the policy of the Government to rely on the free competitive private enterprise system for required products or services to the maximum practicable extent. Only under certain circumstances will the Government obtain its products or services from organic sources. The reasons for this policy are well established; local and national economies are influenced by Government facilities displacing private industry. A healthy private industrial base is important for economic reasons, but more importantly, it represents a key source of industrial capability. DA does not intend to provide organic capacity to perform all the wartime workload. On the contrary, the intent is to provide whatever capability is required, organic or contract, to complete the wartime requirement. Organic depot maintenance capability and capacity are established and sustained on the basis of workloads generated by weapon systems and equipment which are essential to the accomplishment of the Army's mission.

b. Uses for contract maintenance. Contract depot maintenance is used in the following situations:

(1) Depot maintenance requirements exceed the military capability and capacity retained to support mission-essential materiel.

(2) Depot maintenance is required for support of commercial equipment and nontactical elements. This is true only if performance of such work is not required for military effectiveness,

personnel training, or rotation and career development of Army personnel.

(3) Interim contractor support is required to provide a smooth transition to the acquisition of an organic support capability.

4-6. Depot Maintenance Performed.

a. Overhaul is the highest level of maintenance normally performed on Army equipment. It is accomplished based upon specific criteria, detailed in a written document, which is usually a DMWR. Overhaul returns an unserviceable item to a completely serviceable condition but, in most cases, not a "like new" condition. Overhaul may be performed less frequently in wartime than peacetime due to the urgency of returning materiel to battle in the most expeditious manner. This possibility is dependent upon how urgently the item is needed in the combat area, estimated time to overhaul, and the probability that a lesser degree of maintenance will be effective in keeping the item in service.

b. Rebuild is action taken to restore equipment to the original manufacturer's specifications. It exceeds overhaul in complexity and expense, but does not necessarily offer greater reliability characteristics than overhaul. Therefore, even though the ability to perform rebuild may exist, it is not normally utilized. In certain situations, however, rebuild may be prudent for other reasons such as safety in the case of medical materiel.

c. Conversion is the alteration of the basic characteristics of an item to such an extent as to change its mission and performance capability and to result in a change in model designation. Performance of conversions will be curtailed during wartime and limited to those extremely urgent conversions which are immediately necessary for improving the fighting capability of combat units. Such conversions will be performed whether or not they can be performed in conjunction with overhaul. Most conversions scheduled in peacetime are not urgent to the extent that they are required in wartime.

d. Activation is the depreservation, servicing, inspection, testing, and other related maintenance actions required to return a stored or inactive item to operational use. This operation is of utmost importance during mobilization, as items are removed from storage and issued to mobilizing units or to units experiencing combat losses.

e. Modification is the alteration of an item which does not change the basic characteristics of the item to such an extent as to change its mission or performance capability and to result in a

change in model designation as does a conversion. Modifications may be applied during depot overhaul or to equipment in the field by depot teams or contract teams. Only the most critical modifications are considered to warrant the expenditure of resources during wartime. Any modifications deserving attention in wartime must relate directly to a deficient combat capability.

f. Repair is the specified maintenance required to correct materiel damage and to restore an item to required serviceability standards. It includes GS maintenance performed at that level by depot maintenance personnel. During wartime, repair may be performed much more frequently by depot personnel than during peacetime. The requirement to repair equipment quickly and return it to combat sometimes precludes the performance of overhaul, and requires that repair be limited to those repair actions necessary to return the item to combat.

g. Depot maintenance assistance is the use of qualified depot maintenance personnel to perform on-site maintenance requiring those skills and items of equipment normally restricted to depot-level operations. This is one of the more important roles of depot-level maintenance during the mobilization stages of military conflict. Depot-level maintenance augments the maintenance capability of the retail system during mobilization in that depot skills and equipment are made available onsite to perform depot-level tasks. This assistance is available to all Active Army, Army Reserve, and Army National Guard units which are preparing to fulfill their combat missions.

h. Depot technical assistance is on-site assistance of a technical nature which is limited to providing information, instruction, and guidance. No actual maintenance task is performed by the assisting party.

i. Manufacture is the fabrication of an item by application of labor and/or machines to materiel. Depot capability exists to manufacture many items, mostly repair parts; this capability is restrained during peacetime due to the cost of such operations when compared to private industry and its continuous production lines. During wartime, however, depot fabrication will be used to the maximum extent required for selected parts. This does not eliminate the requirement to plan in advance for sufficient quantities and timely production from private industry. Depot fabrication is not a cure for improper planning, but rather than appropriate source of manufacture under crisis conditions.

j. Reclamation is the authorized processing of items to obtain parts or components which are to

be retained in the inventory prior to taking disposal action on the remaining items. Depots take such action after authorization by the NICP of the responsible MSC or other inventory manager. During wartime, reclamation will in some cases be a very important source of repair parts. This includes those cases where nonreparable equipment possesses parts which are urgently needed somewhere in the supply system. Most of such work is performed by the retail maintenance system, but when nonreparable items are inadvertently returned to the depot system, it is performed at that level.

k. Unlike other commodities, maintenance requirements for ammunition cannot be determined on the basis of predetermined yardsticks, such as flying hours, miles driven, or hours of operation. The degree of maintenance will vary dependent upon deficiencies involved, and can range from normal preservations, derusting, repainting, and repacking to more hazardous operations of disassembly and reassembly with serviceable components, modification, and conversion. Renovation is performed to correct deficiencies affecting safety and reliability of ammunition items. It is accomplished based upon a specific scope of work, which is usually detailed in a Depot Maintenance Work Requirement (DMWR), and requires certified operators using specialized APE.

l. Certain aircraft parts which can only be removed, repaired, or replaced at the depot level are inspected by ACE teams. These teams visit annually those units assigned older aircraft. Aircraft found with depot-level defects are then rated, using a point system, for induction into a depot repair program.

4-7. Wholesale Maintenance in a Theater of Operations.

a. General. Wholesale maintenance is oriented toward supporting a TO or a contingency force anywhere in the world. The most immediate assistance required of wholesale maintenance is that supplied by depot-level maintenance. Depot maintenance is principally responsible for returning serviceable items to the wholesale supply system, but in time of war it has an immediate and urgent responsibility to return items quickly to a theater in support of military operations. The necessity of wholesale maintenance operations maintaining a presence in the theater is derived from the nature of today's battlefield. Among the factors influencing the situation are—

- (1) Lack of warning prior to initiation of hostilities.
- (2) Intensity of combat.

(3) Immediate heavy losses of personnel and materiel.

(4) Increased and different equipment failures resulting from an increased operating tempo.

(5) Battle damage (and repairs) not experienced in peacetime.

(6) Limited inventories of materiel.

(7) Possible long lines of communication, precluding depot-level repairs at a CONUS facility.

(8) Abundance of combat-essential components not reparable at retail levels.

(9) Loss of efficiency of retail levels of maintenance caused by the extreme demands of mobility and battlefield conditions.

(10) Limited efficiency and capability for depot-level repairs resulting from limited facilities.

b. Relationship between wholesale maintenance operations and the theater.

(1) The peacetime existence of wholesale maintenance in the theater must continue in wartime. Transfer of a mission from the wholesaler to the theater during the transition to war or during the early phases of war would not normally occur.

(2) A written agreement must exist between the wholesaler and the theater commander which clearly delineates the functions for which each is responsible. This agreement may be a Memorandum of Understanding (MOU), Memorandum of Agreement (MOA), support agreement, any other appropriate agreement, or a combination of these. Agreements should include provisions for the mutual support of the wholesaler and the theater in peacetime, transition, and wartime. These would normally include—

(a) Scope of maintenance to be performed by the wholesaler.

(b) Identification of the equipment to be maintained.

(c) Facilities to be provided by the theater.

(d) Arrangements for all contractor support, whether host nation or United States.

(e) Responsibility for establishing priorities and directing the distribution of repaired materiel.

(f) Clear delineation of the responsibility for wholesaler and theater functions.

(g) Provisions for any other mutual support required during peacetime, transition, and war.

(3) Command, control, and supervision of wholesale personnel, operations, and missions are the responsibility of the wholesaler during peacetime. In wartime, the theater commander assumes control of depot level maintenance operations within the TO. The theater commander establishes and prioritizes the requirements, but

the how and where of meeting those requirements are usually the responsibilities of the wholesaler.

c. Location of wholesale maintenance operations.

(1) A contingency force may have no need for extensive wholesale maintenance outside the CONUS. Wholesale support may be limited to technical assistance or maintenance teams having limited goals and missions of short duration. A fully developed theater, however, may require extensive wholesale support and depot maintenance capability in the communications zone (COMMZ). Wholesale maintenance involving civilians, whether DA, host nation, or contractor, is not deployed forward of the corps rear boundary except for specific missions of limited duration.

(2) Existing sites of wholesale maintenance operations are continued in wartime as long as possible. Alternate sites, preplanned during peacetime, are used when changing wartime conditions so dictate.

(3) Wholesale maintenance activities require protection, as they are a vital element in providing combat sustainability. Provisions must be made to provide protection, as fixed facilities are extremely vulnerable to detection and attack. At the discretion of the wholesaler and in coordination with the theater, wholesale facilities may be placed in the COMMZ, offshore, or in a third country.

d. Scope of depot maintenance. Depot maintenance performs the minimum maintenance required to make equipment mission capable in wartime.

(1) In wartime, overhaul is not performed to the extent required by a DMWR. A not-mission-capable item is made mission capable, but not necessarily capable to fully perform every element of every mission for which it was designed. In short, long-term reliability of equipment may be sacrificed in favor of short-term operational capability. This entails, however, a need for the wholesaler to identify those maintenance actions which may be neglected or modified under emergency conditions. The extent of overhaul is dictated by the urgency with which equipment is needed in combat. This attitude parallels the concept of applying wartime maintenance standards to the retail maintenance of materiel.

(2) When necessary, depot maintenance elements perform general support maintenance, including repair, to assist in returning materiel to combat. This is accomplished in fixed facilities, as necessary, but the preferred concept is one of forward support to complement the forward orientation of retail support levels. Whenever feasible, GS maintenance required of depot organizations is performed onsite.

e. Maintenance in the corps.

(1) The MMC of the corps support command (COSCOM) accomplishes integrated maintenance and supply support in a TO. The COSCOM MMC provides interface between the wholesale logistics level (NICP/NMP) and supported forces. The MMC discharges day-to-day materiel management responsibilities under a concept of centralized management and decentralized operations. Acting on the requirements of supported forces, the MMC places supply demands on the Theater Army MMC (if more than one corps) or CONUS-based NICPs of AMC, the Defense Logistics Agency (DLA), and the General Services Administration (GSA). The MMC may also meet support demands through local procurement and by redistributing supplies and maintenance assets within the command. Materiel maintenance managers are authorized for each commodity division. Their responsibilities include—

- (a) Plan day-to-day for operations.
- (b) Implement coordinating staff policies and plans.
- (c) Develop and apply operating procedures.
- (d) Make continuing analyses of operations.
- (e) Apply corrective action.
- (f) Develop plans and programs to support requirements of the coordinating staff.
- (g) Apply priorities.
- (h) Make management decisions.

(2) Each maintenance branch in divisions of the COSCOM MMC exercises management control over the routine maintenance activities and the maintenance collection efforts of units assigned or attached to the COSCOM. The maintenance branches perform routine maintenance management on a day-to-day basis, and collect maintenance data generated by corps units and division materiel management centers (DMMC). The maintenance branches also receive and use information obtained from the equipment and supply branches and the service support division of the MMC as well as from the DMMCs.

f. Planning for Wholesale Maintenance Operations in Contingency Operations.

(1) The theater Army (TA) commander is ultimately responsible for determining maintenance support requirements; formulating plans and policies for the provision of maintenance; and allocating maintenance units to MSCs based on requirements, priorities, and the availability of maintenance units. The TA commander's operations plan (OPLAN) should describe the concept of maintenance to include the size and composition or ORFs, cannibalization policies, recovery and evacuation policies, night operations, time limits

within which repairs must be made at each level of maintenance, assignment of maintenance responsibilities, and the role of AMC in the theater. The OPLAN would also include the concept of maintenance in a nuclear, biological, or chemical environment. The TA commander is responsible for developing and maintaining a self-sufficient military capability and capacity for the performance of maintenance in the combat, combat support, and combat service support elements of his/her command.

(2) The maintenance concept in a theater without an established U.S. base (such as the Middle East) will differ widely from the concept for a theater where there is an established U.S. military presence (such as Europe or Korea). In the former, initial maintenance efforts would be confined to replacement of modules, components, and assemblies obtained through reparables management procedures. Once hostilities commence, there would be little repair of unserviceable modules, components, or assemblies until such time as a COMMZ or possibly a corps rear area (in the event a corps is the largest unit in the theater) is established. DSUs would be employed in a forward support role. Cannibalization would be a significant source for repair parts to keep maximum numbers of critical combat items operational. Operational readiness floats would be issued to make up shortages or battle losses. Definite plans for the recovery, technical inspection, and evacuation of major items, components, and assemblies which cannot be repaired forward should be established. For repairable combat essential items, plans should indicate in-country repair facilities (other U.S. service, allied, host nation, or commercial) or evacuation to CONUS or other sites outside of the theater or offshore. After a GS base and COMMZ have been established, more time consuming maintenance may be performed. Maintenance in support of the theater supply system will normally be performed by GS maintenance units or other facilities. At this time, GS maintenance units would perform repairs on assemblies, components and modules, repairable exchange items, and printed circuit boards.

(a) In Europe, the maintenance concept would be vastly different because mobile, semi-fixed, and fixed maintenance facilities (to include some depot capability) are in existence. Interservice support agreements, agreements with allies, and host nation support agreements are in effect or are being promulgated. The same holds true with commercial contracts. In effect, the maintenance system is already established. In time of conflict, some modification and expansion would be required.

(b) In Korea, while facilities are not as complete and sophisticated as in Europe, a maintenance system does exist. It can be expanded and can exploit the capabilities of offshore bases in the area to reduce turnaround time.

(c) Planning will also differ in either scenario (established or nonexistent U.S. base) if the forces entering the theater are inserted tactically or administratively. In the former, the proper selection and scheduling of units and the development of resupply and personnel replacement packages is of paramount importance. Many units may be deployed in fragmented configurations. Accompanying supplies will be limited as will resupply due to constraints of transportation and lines of communication. The force must operate with what it brings in. If the forces are inserted into an area

administratively, unit integrity can usually be maintained and larger quantities of supplies can accompany the troops. Scheduling and phasing of the units need not be so finite and personnel and equipment losses should not be so great as with a tactical insertion.

(3) In summary, maintenance planning for deploying forces should consider—

- (a) A short DS evacuation policy.
- (b) Limited class IX stockage.
- (c) Reliance on DSS and ALOC for class IX support.
- (d) Emphasis on modular/component/assembly repair and/or major item replacement.
- (e) Repair of only critical items.
- (f) The elimination of ORF on commencement of hostilities.

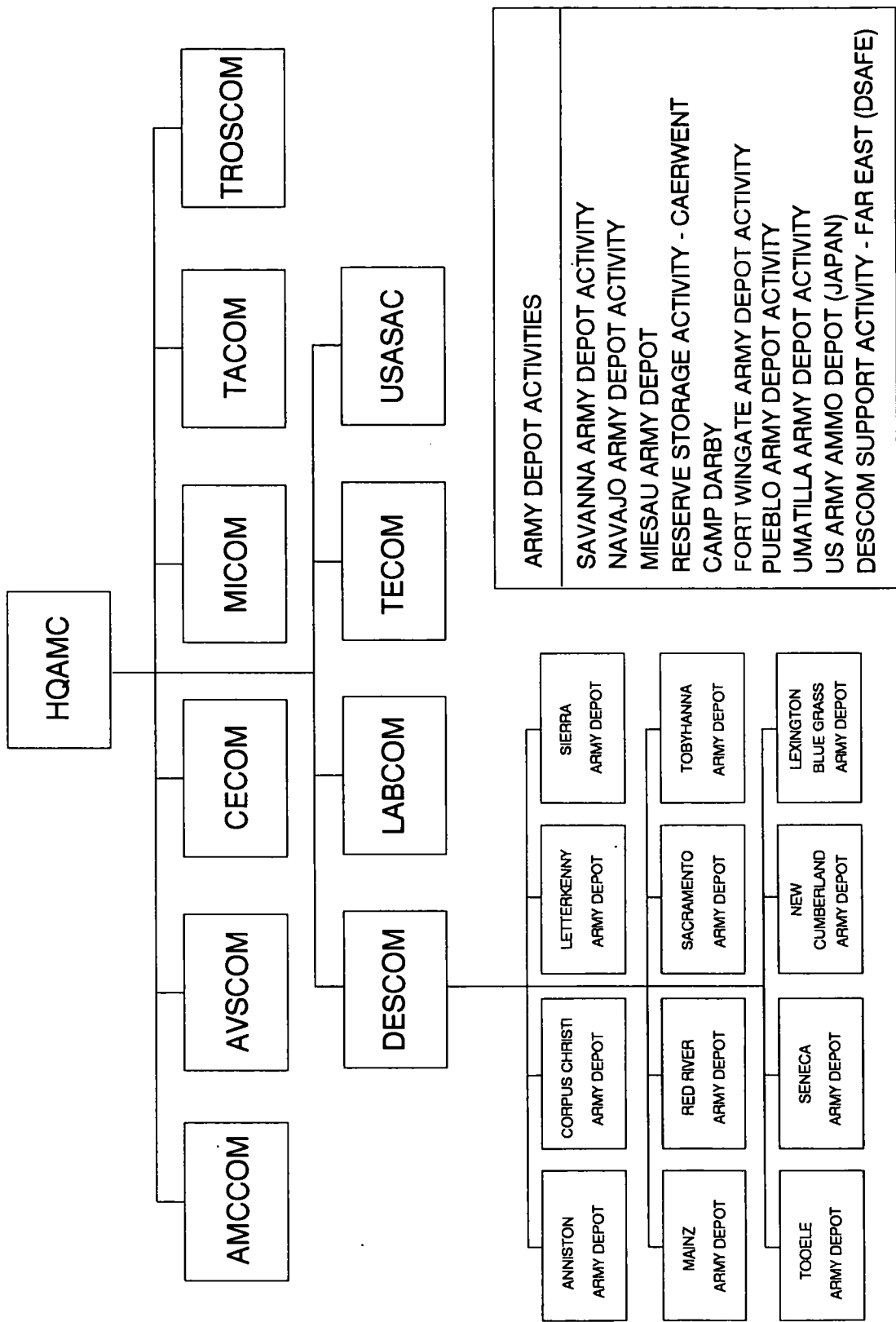


Figure 4-1. U.S. Army Depots and Depot Activities

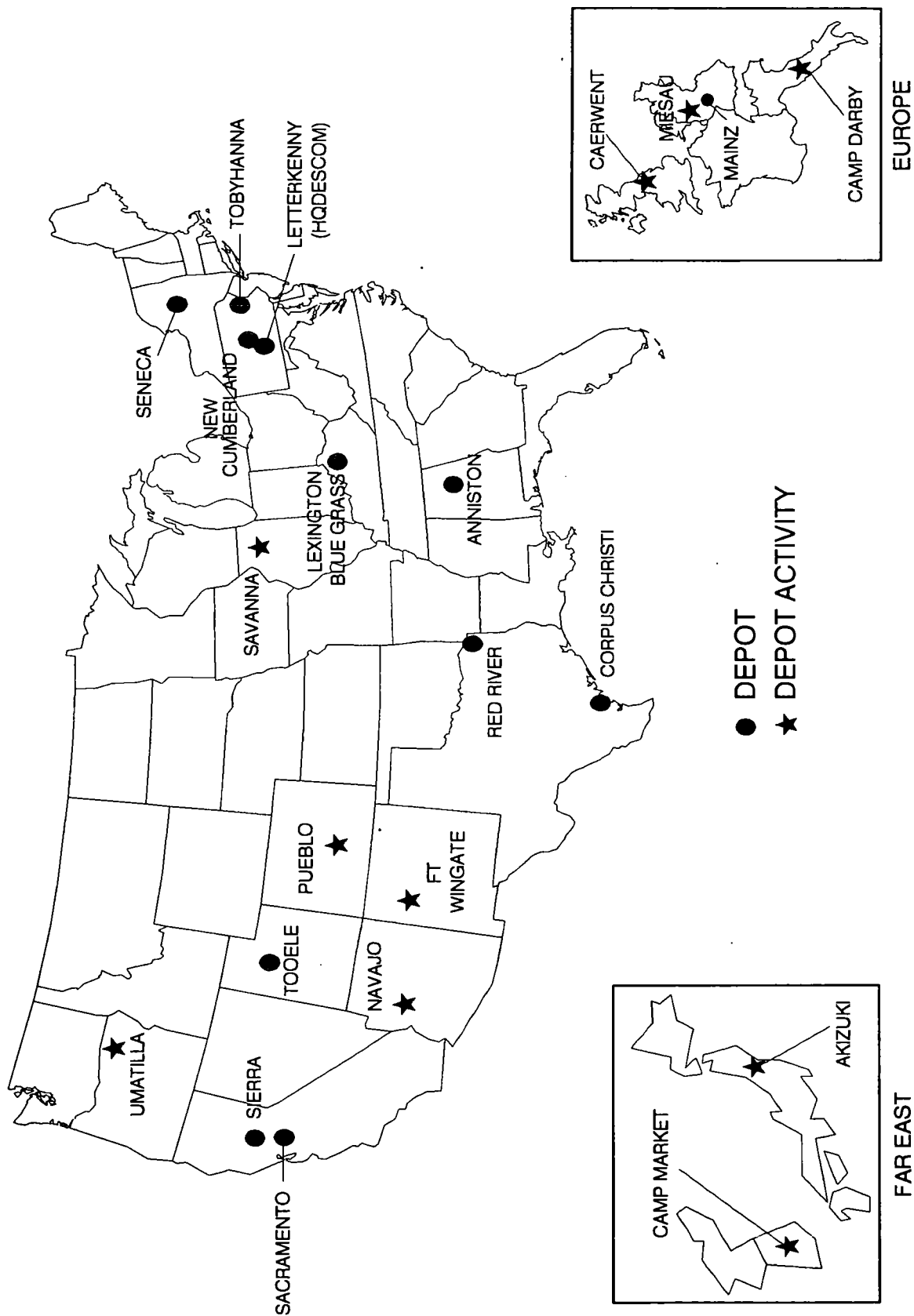


Figure 4-2. AMC Organization for Depot Maintenance

APPENDIX A REFERENCES

A-1. Department of Defense Directives

- 4000.19 Interservice, Interdepartmental, and Interagency Support
- 4005.1 Industrial Preparedness Program
- 4100.15 Commercial Activities Program
- 4151.1 Use of Contractor and DOD Resources for Maintenance of Materiel
- 4151.17 Overseas Depot Maintenance
- 5000.1 Majors and Non-Major Defense Acquisition Program
- 5010.19 DOD Configuration Management Program
- 5160.65 Single Manager for Conventional Ammunition
- 5160.65-M Single Manager for Conventional Ammunition Implementing Joint Conventional Ammunition Policies and Procedures (P&L)

A-2. Department of Defense Instructions

- 4005.3 Register of Planned Emergency Procedures
- 4100.33 DOD In-House vs. Contract Commercial and Industrial Activities Cost Comparison Handbook
- 4151.15 Depot Maintenance Support Programming Policies
- 7220.29-H Department of Defense Depot Maintenance and Maintenance Support Cost Accounting and Production Reporting Handbook (C)

A-3. Army Regulations

- 1-1 Planning, Programming, and Budgeting within the Department of the Army
- 25-30 The Army Integrated Publishing and Printing Program
- 37-55 Uniform Depot Maintenance Cost Accounting and Production Reporting System
- 37-100-XX The Army Management Structure (AMS)
- 40-61 Medical Logistics Policies and Procedures
- 70-1 Systems Acquisition Policy and Procedure
- 70-10 Test and Evaluation During Development and Acquisition of Materiel
- 70-15 Product Improvement of Materiel
- 70-37 Configuration Management
- 71-2 Basis of Issue Plans (BOIP), Qualitative, and Quantitative Personnel Requirements Information (QQPRI)
- 71-3 User Testing
- 71-9 Materiel Objectives and Requirements
- 220-1 Unit Status Reporting
- 310-25 Dictionary of United States Army Terms
- 310-50 Authorized Abbreviations and Brevity Codes
- 350-35 Army Modernization Training
- (C) 381-143 Logistic Policies and Procedures
- 570-2 Manpower Requirements Criteria (MARC)—Tables of Organization and Equipment
- 700-4 Logistic Assistance Program
- 700-8 Logistics Planning Factor Management
- 700-9 Policies of the Army Logistics System
- 700-18 Provisioning of U.S. Army Equipment
- 700-90 Army Industrial Preparedness Program
- 700-120 Materiel Distribution Management for Major Items
- 700-127 Integrated Logistic Support (ILS)
- 700-132 Joint Oil Analysis Program (JOAP)
- 700-138 Army Logistics Readiness and Sustainability

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700-139	Army Warranty Program Concepts and Policies
702-3	Army Materiel Systems Reliability, Availability, and Maintainability (RAM)
710-1	Centralized Inventory Management of the Army Supply System
750-1	Army Materiel Maintenance Policy and Retail Maintenance Operations
750-2	Army Materiel Maintenance Wholesale Operations
750-10	Modification of Materiel and Issuing Safety-of-Use Messages and Commercial Vehicle Safety Recall Campaign Directive
750-43	Army Test Measurement and Diagnostic Equipment

A-4. Department of the Army Pamphlets

25-30	Consolidated Index of Army Publications and Blank Forms
700-126	Basic Functional Structure
738-750	The Army maintenance Management System (TAMMS)
750-40	Guide to Reliability Centered Maintenance (RCM) for Fielded Equipment

A-5. Field Manuals

63-3	Combat Service Support Operations—Corps (How to Support)
700-80	Logistics

A-6. Miscellaneous Publications

Office of Management and Budget (OMB) Circular A-76

APPENDIX B

U.S. ARMY DEPOT MAINTENANCE ASSIGNMENTS

ANNISTON ARMY DEPOT	Heavy combat vehicles; anti-tank missiles; small arms weapons; ammunition
CAMP DARBY	Ammunition
CORPUS CHRISTI ARMY DEPOT	Helicopters; aircraft engines, transmissions, roto blades, and heads
ELECTRONIC MATERIEL READINESS ACTIVITY DEPOT	Strategic/tactical/signal intelligence and electronic warfare equipment
FORT WINGATE ARMY DEPOT ACTIVITY	Ammunition
LETTERKENNY ARMY DEPOT	Air defense missiles; self propelled and towed artillery; ammunition
LEXINGTON BLUEGRASS ARMY DEPOT	Ammunition; communications security equipment
MAINZ ARMY DEPOT	Combat vehicles
MIESAU ARMY DEPOT	Ammunition
NAVAJO ARMY DEPOT ACTIVITY	Ammunition
NEW CUMBERLAND ARMY DEPOT	Air delivery items
PUEBLO ARMY DEPOT ACTIVITY	Pershing missile ammunition
RED RIVER ARMY DEPOT	Light combat vehicles; air defense missiles; combat rubber products; ammunition
RESERVE STORAGE ACTIVITY—CAERWENT	Ammunition
SACRAMENTO ARMY DEPOT	Strategic electronics; night vision equipment
SAVANNA ARMY DEPOT ACTIVITY	Ammunition
SENECA ARMY DEPOT	Ammunition
SIERRA ARMY DEPOT	Ammunition
TOBYHANNA ARMY DEPOT	Electronics and communications equipment; cameras and projectors; automatic digital network (AUTODIN) support
TOOELE ARMY DEPOT	Automotive vehicles; engines; transmissions; power train materials; general rail materials; automotive rubber products; handling equipment and construction items; mobile electric power; red eye missile; topographic equipment; ammunition
UMATILLA ARMY DEPOT ACTIVITY	Ammunition
U.S. ARMY AMMUNITION DEPOT (AKIZUKI, JAPAN)	Ammunition
19th SUPPORT COMMAND (TAEGU, KOREA)	Ammunition

NOTE: The Electronic Systems Specialized Repair Activity, a CECOM element assigned to the U.S. Army Electronics Materiel Readiness Activity, performs up to depot level maintenance on low density EW/SIGINT equipment.



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GLOSSARY

AAO	Army Acquisition Objective	COCO	Contractor-Owned, Contractor-Operated
ABE	Army Budget Estimate		
ACE	Aircraft Condition Evaluations	COE	Chief of Engineers
ADP	Automatic Data Processing	COMMZ	Communications Zone
ADVANCE	Army Data Validation and Netting Capabilities Establishment	CONUS	Continental United States
ALMC	U.S. Army Logistics Management College	COSCOM	Corps Support Command
ALOC	Air Lines of Communication	CVE	Combat Vehicle Evaluations
AMC	U.S. Army Materiel Command	DA	Department of the Army
AMCCOM	U.S. Army Armament, Munitions, and Chemical Command	DCSIN	Deputy Chief of Staff for Intelligence
AMIM	Army Modernization Information Memorandum	DCSLOG	Deputy Chief of Staff for Logistics
AMP	Army Materiel Plan	DCSOPS	Deputy Chief of Staff for Operations and Plans
APE	Ammunition Peculiar Equipment	DESCOM	U.S. Army Depot System Command
AR	Army Regulation	DLA	Defense Logistics Agency
ARNG	Army National Guard	DMI	Depot Maintenance Interservicing
ASA (RDA)	Assistant Secretary of the Army (Research, Development, and Acquisition)	DMISA	Depot Maintenance Interservice Support Agreement
ASL	Authorized Stockage List	DMMC	Division Materiel Management Center
ATLP	Army-Wide Training Literature Program	DMSP	Depot Maintenance Support Plan
AVCRAD	Aviation Classification Repair Activity Depot	DMWR	Depot Maintenance Work Requirement
AVIM	Aviation Intermediate Maintenance	DOD	Department of Defense
AVSCOM	U.S. Army Aviation Systems Command	DR	Distribution Requirement
AVUM	Aviation Unit Maintenance	DS	Direct support
AWLL	Army Wholesale Logistics Literature	DSS	Direct Support System
BDAR	Battlefield Damage Assessment and Repair	DSU	Direct Support Unit
BOIP	Basis-of-Issue Plan	EIR	Equipment Improvement Recommendation
BY	Budget Year	FMMP	Force Modernization Master Plan
CCSS	Commodity Command Standard System	FMS	Foreign Military Sales
CECOM	U.S. Army Communications-Electronics Command	FORSCOM	U.S. Army Forces Command
		FUED	Fire Unit Equipped Date
		FY	Fiscal Year
		GOCO	Government-Owned, Contractor-Operated
		GS	General Support

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GSA	General Services Administration	NMP	National Maintenance Point
GSU	General Support Unit	NSN	National Stock Number
HQDA	Headquarters, Department of the Army	OCAR	Office of the Chief, Army Reserve
ILS	Integrated Logistics Support	OCONUS	Outside Continental United States
ILSP	Integrated Logistic Support Plan	OPLAN	Operational Plan
LABCOM	U.S. Army Laboratory Command	OPS	Operational Plan Summary
LAMP	Logistics Automation Master Plan	ORF	Operational Readiness Float
LCMM	Life-Cycle Management Model	OST	Order Ship Time
LSA	Logistic Support Analysis	PARR	Program Assessment Review Report
LSAR	Logistic Support Analysis Record	PCB	Printed Circuit Board
MAC	Maintenance Allocation Chart	PLL	Prescribed Load Lists
MACOM	Major Army Command	POM	Program Objective Memorandum
MARC	Manpower Requirements Criteria	POMCUS	Prepositioning of Materiel Configured to Unit Sets
MDMS	Maintenance Data Management System	PURE	POMCUS Unit Residual Equipment
MEL	Maintenance Expenditure Limits	RAM	Reliability, Availability, and Maintainability
MFA	Materiel Fielding Agreement	RCF	Repair Cycle Float
MFM	Master File for Maintenance	RPSTL	Repair Parts and Special Tools List
MFP	Materiel Fielding Plan	RX	Reparable Exchange
MFT	Materiel Fielding Team	SAMS	Standard Army Maintenance System
MICOM	U.S. Army Missile Command	SARSS	Standard Army Retail Supply System
MMC	Materiel Management Center	SB	Supply Bulletin
MOA	Memorandum of Agreement	SDC	Sample Data Collection
MON	Memorandum of Notification	SDS	Standard Depot System
MOS	Military Occupational Specialty	SIMA	Systems Integration and Management Activity
MOU	Memorandum of Understanding	SLAC	Support List Allowance Card
MRIS	Modernization Resource Information Submission	SMCA	Single Manager for Conventional Ammunition
MRSA	Materiel Readiness Support Activity	SOR	Source of Repair
MSC	Major Subordinate Command	STAMIS	Standard Army Management Information Systems
MSP	Mission Support Plan	TA	Theater Army
MWO	Modification Work Order	TACOM	U.S. Army Tank-Automotive Command
NATO	North Atlantic Treaty Organization		
NET	New Equipment Training		
NETT	New Equipment Training Team		
NICP	National Inventory Control Point		

TAMMS	The Army Maintenance Management System	TRADOC	U.S. Army Training and Doctrine Command
TAMMS-A	The Army Maintenance Management System—Aviation	TRAP	Transportability Approval
TB	Technical Bulletin	TROSCOM	U.S. Army Troop Support Command
TECOM	U.S. Army Test and Evaluation Command	TSG	The Surgeon General
TM	Technical Manual	UIC	Unit Identification Code
TMDE	Test, Measurement, and Diagnostic Equipment	ULLS	Unit Level Logistics System
TO	Theater of Operations	USASAC	U.S. Army Security Affairs Command
TOE	Table of Organization and Equipment	WOLF	Work Order Logistics File



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